Access DB# 102684

# SEARCH REQUEST FORM

**Scientific and Technical Information Center**

Requester's Full Name: Angela J Martin Examiner #: 76027 Date: 8/28/03
Art Unit: 1745 Phone Number 305-0586 Serial Number: 09/986,667
Mail Box and Bldg/Room Location: CP3-8A05 Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Nonaqueous Electrolyte Battery

Inventors (please provide full names): ATTACHED

Earliest Priority Filing Date: 11/7/01 ; Foreign Priority 11/13/00

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

claims 1-4 only

* positive electrode (cathode) is $CoFe_2O_4$
* negative " (anode) is lithium-silicon (Li-Si) → alloy
* nonaqueous (non-aqueous) electrolyte battery

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**STAFF USE ONLY**

Searcher: Ed
Searcher Phone #:
Searcher Location:
Date Searcher Picked Up:
Date Completed: 8-29-03
Searcher Prep & Review Time: 5
Clerical Prep Time:
Online Time: 70

**Type of Search**

NA Sequence (#)
AA Sequence (#)
Structure (#) ✓ (2)
Bibliographic ✓ (and)
Litigation
Fulltext
Patent Family
Other

**Vendors and cost where applicable**

STN $141.53
Dialog
Questel/Orbit
Dr. Link
Lexis/Nexis
Sequence Systems
WWW/Internet
Other (specify)

PTO-1590 (8-01)

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=> file reg
FILE 'REGISTRY' ENTERED AT 15:26:43 ON 29 AUG 2003
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> display history full l1-


     FILE 'REGISTRY' ENTERED AT 14:25:46 ON 29 AUG 2003
                E FERRITE/CN
L1            1 SEA FERRITE/CN
L2          289 SEA (CO(L)FE(L)O)/ELS (L) 3/ELC.SUB
L3           83 SEA (LI(L)SI)/ELS (L) 2/ELC.SUB
L4         6764 SEA LI/ELS AND AYS/CI

     FILE 'HCA' ENTERED AT 14:40:37 ON 29 AUG 2003
L5       185765 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
                OR GALVANI? OR PRIMARY OR SECONDARY OR WET OR DRY)(2A)(CE
                LL  OR CELLS)
L6        40291 SEA NONAQUEOUS? OR NONAQ# OR NONH2O OR NONWATER? OR
                NON(A)(AQ# OR AQUEOUS? OR H2O OR WATER?)
L7              QUE ELECTROD## OR ANOD## OR CATHOD##
L8         2794 SEA L2
L9        68781 SEA L1 OR FERRITE# OR FERROSPINEL#
L10         164 SEA L1
L11         293 SEA L3
L12        9522 SEA L4
L13        7728 SEA L5 AND L6 AND L7
L14          19 SEA L13 AND L11
L15           1 SEA L14 AND (L8 OR L9 OR L10)
L16         162 SEA L5 AND L11
L17           1 SEA L16 AND (L8 OR L9 OR L10)
L18        1143 SEA L5 AND L12
L19           1 SEA L18 AND (L8 OR L9 OR L10)
L20           0 SEA L13 AND L10
L21           4 SEA L13 AND L8
L22           7 SEA L13 AND L9

     FILE 'HCA' ENTERED AT 15:09:16 ON 29 AUG 2003
L23        1546 SEA COFE2O4 OR FE2COO4
L24           7 SEA L5 AND L23
L25           0 SEA L24 AND (L11 OR L12)
L26          15 SEA L15 OR L17 OR L19 OR L21 OR L22 OR L24
L27          18 SEA L14 NOT L26


=> file hca
FILE 'HCA' ENTERED AT 15:27:26 ON 29 AUG 2003
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> d l26 1-15 cbib abs hitstr hitind

L26 ANSWER 1 OF 15 HCA COPYRIGHT 2003 ACS on STN
136:372276 Secondary **nonaqueous**-electrolyte **battery** with **cathode** containing **ferrite** or iron sulfide.
Kusumoto, Yasuyuki; Fujimoto, Masahisa; Fujitani, Noboru; Miyake, Masahide (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002151075 A2 20020524, 10 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 2000-345491 20001113.

AB The title **battery** is equipped with a **cathode** contg. a **ferrite** and an **anode** contg. a Li alloy. Alternatively, the **battery** is equipped with a **cathode** contg. FeS2 and an **anode** contg. a Li alloy. The **battery** has high capacity and energy d.

IT **68848-64-6**
(**anode**; **cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)
RN 68848-64-6 HCA
CN Lithium alloy, nonbase, Li,Si (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Li | 7439-93-2 |
| Si | 7440-21-3 |

IT **12052-28-7**, Cobalt **ferrite**
(**cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)
RN 12052-28-7 HCA
CN Cobalt iron oxide (CoFe2O4) (8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| O | 4 | 17778-80-2 |
| Co | 1 | 7440-48-4 |
| Fe | 2 | 7439-89-6 |

IC ICM H01M004-58
ICS H01M004-02; H01M004-40; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **ferrite cathode** secondary **nonaq** **battery**; iron sulfide **cathode** lithium **battery**
IT **Battery cathodes**
(**cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)

IT **Ferrites**
(**cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)
IT Secondary **batteries**
(lithium; **cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)
IT Lithium alloy, base
(**anode**; **cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)
IT **68848-64-6**
(**anode**; **cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)
IT 1309-37-1, Ferric oxide, uses 1317-61-9, Iron oxide (Fe3O4), uses **12052-28-7**, Cobalt **ferrite** 12063-10-4, Manganese **ferrite** 12068-85-8, Iron disulfide 12168-54-6, Nickel **ferrite** 220152-22-7, Iron potassium oxide (Fe11K1.4O17)
(**cathode** contg. **ferrite** or iron sulfide in secondary **nonaq**.-electrolyte **battery**)

L26 ANSWER 2 OF 15 HCA COPYRIGHT 2003 ACS on STN
134:149951 Chemical reactivity of perovskite oxide SOFC cathodes and yttria stabilized zirconia. Kostogloudis, G. Ch.; Tsiniarakis, G.; Ftikos, Ch. (Laboratory of Inorganic Materials Technology, Department of Chemical Engineering, National Technical University of Athens, Athens, GR-157 80, Greece). Solid State Ionics, 135(1-4), 529-535 (English) 2000. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..
AB The chem. reactivity of perovskite oxide SOFC cathodes and yttria stabilized zirconia (YSZ) solid electrolyte was studied. The perovskite oxides that were examd. were La1-xSrxCo0.2Mn0.8O3-d, La1-xSrxCo0.2Fe0.8O3-d and La1-xCaxCo0.2Fe0.8O3-d (0.ltoreq.x.ltoreq.0.5), as well as, the A-site deficient oxides La0.6-zSr0.4Co0.2Fe0.8O3-d, La0.6Sr0.4-zCo0.2Fe0.8O3-d and (La0.6Sr0.4)1-zCo0.2Fe0.8O3-d (0.ltoreq.z.ltoreq.0.2). Equimolar perovskite/YSZ powder mixts. were prepd. and annealed at 1100.degree.C for 120 h. X-ray diffraction anal. was conducted to identify any reaction products. Si-std. was used as an internal std. for d-value calibration, during the detn. of the lattice parameter of cubic YSZ. The main reaction products were La2Zr2O7 for the undoped and lightly doped Fe-contg. compns. and (Sr/Ca)ZrO3 for the Sr/Ca doped compns. Also, **CoFe2O4** was formed in the case of the Fe-contg. compns. and monoclinic zirconia for La1-xCaxCo0.2Fe0.8O3-d with x = 0.4, 0.5. A-site deficiency in La0.6Sr0.4Co0.2Fe0.8O3-d-based perovskites reduced the amt. of SrZrO3 formed, only in the case of La0.6Sr0.4-zCo0.2Fe0.8O3-d with 0.ltoreq.z.ltoreq.0.2 and (La0.6Sr0.4)1-zCo0.2Fe0.8O3-d with z=0.2. The lattice parameter of YSZ exhibited a shift, corresponding to a lattice contraction, due to the diffusion of the transition metal cations from the perovskite into YSZ.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 78
IT Annealing
Fuel cell cathodes
Fuel **cell electrolytes**
Solid state fuel cells
(high temp. reactivity of perovskite oxides and yttria stabilized zirconia)
IT 12013-47-7, Calcium zirconium oxide (CaZrO3) 12031-48-0, Lanthanum zirconium oxide (La2Zr2O7) 12036-39-4, Strontium zirconium oxide (SrZrO3) 12052-28-7, Cobalt iron oxide (**CoFe2O4**)
(high temp. reactivity of perovskite oxides and yttria stabilized zirconia)

L26 ANSWER 3 OF 15 HCA COPYRIGHT 2003 ACS on STN
134:44424 Reactivity and interdiffusion of alternative SOFC cathodes with yttria stabilized zirconia, gadolinia doped ceria and doped lanthanum gallate solid electrolytes. Kostogloudis, G. Ch.; Tsiniarakis, G.; Riza, F.; Ftikos, Ch. (National Technical University of Athens, Greece). EUROMAT 99, Biannual Meeting of the Federation of European Materials Societies (FEMS), Munich, Germany, Sept. 27-30, 1999, Meeting Date 1999, Volume 13, 175-180. Editor(s): Grassie, K. Wiley-VCH Verlag GmbH: Weinheim, Germany. (English) 2000. CODEN: 69AMNI.
AB The chem. compatibility between the cathode compn. Pr0.8Sr0.2Co0.2Fe0.8O3-.delta. and the electrolyte compns. yttria stabilized zirconia (YSZ), Ce0.8Gd0.2O1.9 (CGO) and La0.8Sr0.2Ga0.9Mg0.1O3-.delta. (LSGM) was investigated. Also, the influence of the substitution of Al for Fe on the reactivity of the cathode with YSZ was examd. All oxides were single phase materials except for LSGM, which contained two addnl. phases, namely LaSrGa3O7 and LaSrGaO4. Two types of expts. were performed: (a) reactivity expts. by XRD in cathode/electrolyte powder mixts. and (b) diffusion expts. by SEM/EDX anal. in cathode/electrolyte double-layer pellets. Pr2Zr2O7, SrZrO3 and **CoFe2O4** were formed by the interaction of the cathode materials with YSZ. Substitution by Al at the B-site of the perovskite cathode led to a decrease of its reactivity with YSZ. No reaction products were formed for powder mixts. of Pr0.8Sr0.2Co0.2Fe0.8O3-.delta. and CGO or LSGM electrolytes. High Co and Fe diffusion into LSGM was identified. Pr, La and Ga show a smaller tendency for diffusion. The diffusion of transition metal cations into LSGM electrolyte caused the destabilization and disappearance of the second phases in the interdiffusion zone.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST fuel cell cathode reactivity yttria stabilized zirconia; gadolinia doped ceria reactivity fuel cell cathode; lanthanum gallate reactivity fuel cell cathode; **electrolyte** reactivity fuel **cell** cathode
IT Fuel cell cathodes
Fuel **cell electrolytes**
Solid state fuel cells